Long line farming of *Kappaphycus alvarezi* in Tuticorin coastal areas and its implication on environment

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Kappaphycus alvarezi, one of the fastest growing tropical red algae, is currently been cultivated by a group of fishermen in many areas of Tuticorin coastal waters. It is used mainly as the raw material for commercial production of hydrocolloid known as Kappa carrageen. In Tuticorin, long line method of culture is followed in coastal waters where the tidal currents are strong. In this system, thin lines having loops to secure multiple small seedlings are spread at regular intervals attached to longer and thicker lines. Poly-ethylene terephthalate (PET) bottles with caps are used as floats (Fig.1). Weighed blocks are used as anchors and use sufficient quantity of floats to maintain the proper depth below the water surface level.

Fig. 1. PET bottles used as floats in the long line farming of *K. alvarezi*

Cost is supposed to be the major factor for using PET bottles. They are as cheap as ₹ 1/bottle compared to the commercial buoys of 5/piece. These PET bottles have a life of more than 3 years, until it become brittle or damaged. Comparatively a lesser cost of production and a better space utilization, make Long line method preferred in Tuticorin area to raft method, which is widely accepted on other coasts.

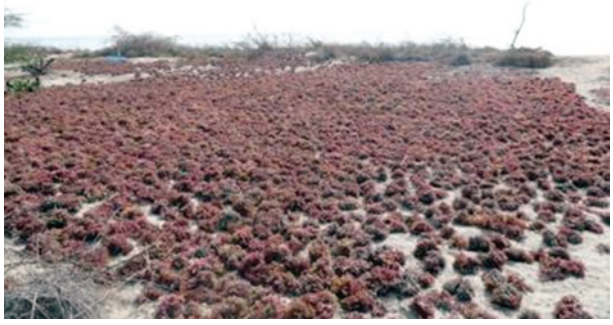

Fig. 2. Drying of *K. alvarezi* on beach

The extensive use of plastic bottles as floats in the long line seaweed cultivation reveals the lack or poor awareness among fishermen on the ban of plastics in Tuticorin, which came into force since 2011. In the long run, this would become one of the primary causes of marine litter build up and the liberation of micro plastics causing hazardous effects to the marine environment. These micro plastics (>5 mm) are usually produced because of the mechanical force like waves and photochemical process triggered by sun light on large plastic materials which are damaging the filter and deposit feeder fauna. Worldwide micro plastics has become a paramount issue due to the alarming effect it cause to the ecosystem.

Each crop of *Kappaphycus* takes an average 40 days and the average productivity from a single mainline rope is up to 2100 kg. Normally, 40% of the harvest is used for reseeding the upcoming crop. The wet product fetch 3.50/kg and the sun dried ones will realize up to 25/kg. They get an average income of up to ₹ 7400/- if they sell the wet product and the sun dried product can fetch an additional income of up to ₹ 500/-. Considering the poor labor inputs, lesser expenditure and infrastructure

requirements, this becomes a good income source for the poor fishermen families. It is important to make this sector of people aware on the impacts of the plastic pollution caused to the ecosystem and how they attribute it. Proper financial assistance through government agencies can be given to the genuine farmers for building up quality infrastructure which will help to maintain the income to these poor families and to reduce the pollution through these sources.